

Appointment

From: Nowak, April [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19AEEB0DB30E4419924A8FB77BF58DE8-NOWAK, APRIL]
Sent: 4/10/2019 9:58:19 PM
To: Satter, Suzanne [satter.suzanne@epa.gov]; Devito, Steve [Devito.Steve@epa.gov]; Senthil, Velu [Senthil.Velu@epa.gov]; Pardue-Welch, Kimberly [Pardue-Welch.Kimberly@epa.gov]
Subject: 2017 ad hoc data quality -- coal facilities -- sulfuric acid
Attachments: R8 ad hoc status and facilities.xlsx
Location: **Ex. 6 Personal Privacy (PP)**
Start: 4/11/2019 4:00:00 PM
End: 4/11/2019 4:30:00 PM
Show Time As: Tentative

Steve and Velu,
Sent in email and updated in message invite. Updated 04.10.19 – 4pm MT

We have been working on the 2017 Ad Hoc Data Quality calls. We have not yet contacted coal facilities for the coal-cdr-non facilities. Suzanne identified some of the facilities are below threshold using publicly available data on coal types and sources. Suzanne calculated for each facility the coal type, source, and calculated chemical using table 3-5 to determine if the chemical would need to be reported based on threshold.

Please find an excel spreadsheet of the calculations for coal source, type, and chemical. I will provide more information tomorrow, attached to this invite, regarding our questions for source documentation for chemicals, with specific detail for sulfuric acid. Please see the 3rd tab for facility specific information.

Thanks.

Steve and Velu,
Thank you for meeting with us on Thursday.
Sorry in advance that I could not get this to you earlier on Wednesday.

Please see attachment and link for reference documents.
Attached is a document with the cover page, table of contents, and page 16 (sulfuric acid calculation with my comments) of guidance document referenced in EPCRA Electricity Generating Facilities document available on QuEST.

The following is also referenced in QUEST: EPCRA Section 313 Industry Guidance: ELECTRICITY GENERATING FACILITIES
https://ofmpub.epa.gov/apex/guideme_ext/guideme_ext/guideme/file/electricity%20generating%20facilities.pdf

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) Our management requested a list of the coal companies we are planning on contacting. We provided a primary list, and will update when we have completed determining threshold. We want to be sure about calculations and thresholds prior to contacting these facilities.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP) R8 is taking a more conservative approach and verifying numbers using publicly available resources. We will contact facilities that are above threshold for individual chemical(s)/compounds. We did receive guidance from Velu about referencing Table 3-5 in correspondence with facilities (below).

Regarding the process for the CDR-COAL-NON, facilities should be able to easily access source information and methodology EPA uses to determine potential for a data quality review. R8 previously contacted facilities without understanding the sources or methodology, and received negative feedback from facilities. We need to use guidance that is available to facilities via the TRI website. Calculation and reference sources need to be provided prior to undertaking data quality reviews. The source materials and calculations need to be added to QUEST templates and provided to Regions for discussion, prior to starting the data quality review. EPA used values from the Department of Energy EIA to determine a facility's coal consumption. This is not clearly outlined in the template. Any outside reference sources should include links, and rationale for using this information. Also, it is difficult to determine how a facility would use the link to find supporting information.

More specifically for example, values identified for data quality review for TRI-State Generation & Transmission - Craig Station (TRIFID: 81626TRSTT2201R) for arsenic and cobalt using the TRI program-created "Estimated Chemical Content by Coal Type" yields total manufactured amounts above threshold at 26,152 and 26,956 pounds, respectively.

R8 calculations using table 3-5 (February 2000, EPA 745-B-00-004), identifying coal type, and source, yields below threshold values of 10,943 pounds (arsenic compounds) and 16,335 pounds (cobalt compounds). Based on R8 calculations, we would not contact this facility. Yesterday, I included an excel spreadsheet with the calculations for each facility by coal type, source, and chemicals. We are intending to use these calculations to determine threshold and plan on contacting facilities only if they are above threshold and only for the specific chemicals above threshold.

We received the following guidance from Velu for the Coal facilities:

Ex. 5 Deliberative Process (DP)

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Suzanne calculated for all chemicals except for sulfuric acid. The calculations for sulfuric acid are not clear.

Question from R8:

How was the sulfuric acid conversion factor calculated in the “Estimated Chemical Content by Coal Type (lb/ton coal)” sent in your 3/14/19 email (see table above). The guidance document referenced in QuEST for the error CDR-COAL-NON is *EPCRA Section 313 Industry Guidance Electricity Generating Facilities – February 2000 EPA 745-B-00-004*. This document references *EPCRA Section 313: Guidance for Reporting Sulfuric Acid, EPA, March 1998* for the calculation of sulfuric acid in combusted coal.

Ex. 5 Deliberative Process (DP)

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In the conversion formula, S is equal to the percent sulfur in the coal, however in the calculation below, 3% has been converted to “3” (see red outline below).

We need to be able to clearly direct our facilities to EPA-documented conversion formulas.

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Sulfuric acid aerosols are produced as a byproduct from boilers during coal combustion. U.S. coals contain from 0.2% to 7% sulfur by weight (13). On average, about 95% of sulfur present in bituminous coal will be emitted as gaseous sulfur oxides (SO₂) when burned, whereas somewhat less will be emitted when subbituminous coal is burned (15). In general, boiler size, firing configuration, and boiler operations have little effect on the percent conversion of sulfur in fuel to sulfur oxides. About 0.7% of fuel sulfur is emitted as SO₂/H₂SO₄ (15). This information can be expressed as an uncontrolled emission factor (EF) of 0.43 x S pounds H₂SO₄ per ton of coal burned, where S is the weight percent sulfur in coal. The uncontrolled emission factor also represents the amount of sulfuric acid produced in the stack, as well as that released to the atmosphere in the absence of scrubbers or other emission control devices. The emission factor for sulfur oxides (SO₂) for bituminous coal combustion *should not be used* to estimate sulfuric acid emissions since the factor includes sulfur dioxide. If C is the tons of coal burned, the pounds of H₂SO₄ generated (H), would be:

$$H = 0.43 \times S \times C$$

For example, if 9,000 tons of coal were burned and the coal contained 3% sulfur, then:

$$H = 0.43 \times 3 \times 9,000 = 11,610 \text{ pounds of H}_2\text{SO}_4$$

Note that the values for the variables C and S have been chosen as an illustration. Values must be chosen that are appropriate for the particular operations at each facility.

R8 received this response:

QuEST text references Table 3-5 in EGF guidance document for all chemicals except sulfuric acid. For sulfur content, we used national averages for each coal type from Department of Energy/Energy Information Agency data.

Here is the methodology and feel free to let me know for more information.

HCl and HF Methodology:

The chlorine oxide (Cl₂O) and fluorine oxide (F₂O) quantities from each source in EGF Table 3-5 were grouped for each coal type (Bituminous; Sub-Bituminous; Lignite) and averaged. Using stoichiometric conversions assuming complete conversion of chlorine oxide and fluorine oxide to hydrochloric acid aerosol and hydrogen fluoride, estimates of the national average of hydrochloric acid aerosol and hydrogen fluoride manufactured per ton of coal were calculated.

H₂SO₄ Methodology:

Because similar sulfur data were not provided in the EGF document, we used EIA-923 data from 2012 to estimate the average sulfur content in each coal type (Bituminous; Sub-Bituminous; Lignite) combusted in electric utility boilers. Using stoichiometric conversions assuming complete conversion of sulfur to sulfuric acid, an estimate an national average of sulfuric acid generated per ton of coal was calculated.

Ex. 5 Deliberative Process (DP)

We appreciate your attention to this matter and any clarification you can provide.

Thank you for taking the time to work with us. We want to be responsive to the data quality call, while reducing burden on facilities if our calculations show their reported chemicals are below threshold.

We look forward to meeting tomorrow.

April Nowak
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